Bachelor of Architecture Technology and Construction Management*

Architects and Designers from times immemorial have played a crucial role in contributing to the betterment of humanity and in shaping the world by creating, developing, organizing and managing complex designs and technologies. The growing influence of art and technology on all functions of society has created a good demand of Architects, Construction Managers and Designers. The primary objective of this program is to educate men and women for leadership in the industry and educational institutions, advance the knowledge base of Art, Architecture and Design professionals, and to influence the future direction of Design and Architecture.

Eligibility Criteria: 10+2 or equivalent with maths

To complete Bachelor of Architecture Technology and Construction Management**,** a student has to earn a minimum of 180 credits. Minimum 100 credits are to be earned science subjects and minimum 40 credits from architecture technology and construction management subjects and the remaining can be taken from any stream.

Every student has to attain a minimum of D grade in all courses, a student may however, and repeat or change any course being offered. Notwithstanding, every student must acquire the desired number of credits. The detailed course structure under different categories is given in succeeding pages. Brief description of the course content follows thereafter.

**This course will be offered after necessary approvals from the respective council and as per their requirements*

Codes	Subject Name	Credit
1A.101	Art and Graphics	4
1A.102	Historical and Contextual Referencing I	4
1A.103	Site Surveying	4
1A.104	Construction I	4
1A.105	Technical Drawings I	4
1A.106	Design Principles I	4
1A.107	Typographic Ideas I	4
1A.108	Cultural Interpretation	4
1A.109	Building Materials	4
1A.110	Construction II	4
1A.111	Climatology	4
1A.112	Design Procedures II	4
1A.113	Computer Applications I	4
1A.114	Technical Drawings II	4
1A.115	Historical and Contextual Referencing II	4
1A.116	Interior Design	4
1A.117	Typographic Ideas II	4
1A.201	Theory of Structure I	4
1A.202	Computer Applications II	4
1A.203	Construction-III	4
1A.204	Estimation	4
1A.205	Business Communication	4
1A.206	Retail Design	4
1A.207	Management Principles	4
1A.208	Adaptive Reuse of Structures	4
1A.209	Construction IV	4
1A.210	Law and Contracts	4
1A.211	Theory of Structure II	4
1A.212	Building Services I	4
1A.213	Computer Applications III	
1A.214	Health Safety and Welfare	4
1A.215	Exhibition Design	4
1A.216	Furniture Design	4
1A.217	Photography, Media Techniques and Technology	4
1A.301	Construction V (Equipments and Methods)	4
1A.302	Building Services II	4
1A.303	Design and Function-Office Design	4

1A.304	Website Design	4
1A.305	Design Technology	4
1A.306	Recent Advances and Const. Practice	4
1A.307	System Design and Value Engineering	4
1A.445	Project I	4
1A.446	Project II	4

1A.101 Arts and Graphics
Credit: 4
In this subject students will be encouraged to develop visual thinking and creativity as fundamental to all art, design or craft work. This subject will enable students to learn drawing approaches and techniques in order to broaden their experience and understanding of visual language.
Contents: Materials and media specific to art, craft and design, Drawing medium, Technological media, Application of materials and techniques, drawing techniques and processes, visual language, Development, clarification and utilization of visual coding and decoding, intentional use of layout and composition, Evaluate and analyze, de-construction of outcomes.

1A.102 Historical and Contextual Referencing - I
Credit: 4
This subject introduces students to the cultural history, which informs current thought and debate towards art, craft and design. Emphasis is on research and study skills and on students acquiring source material and knowledge.
Contents: Research, Electronics sources, Paper-based materials, influences, Historical and cultural histories: major historical movements, modern practitioners, Making judgments: questioning, comparing, measuring, observing, conclusions, Presentation forms: oral presentation, illustrated written communication.

1A.103 Site Surveying
Credit: 4
This subject builds upon the theory of surveying. It is designed to enhance the student's ability to use modern surveying equipment to undertake a range of site surveying procedures typical of today's construction industry.
Contents: Range of instruments, The selection of appropriate instruments for a given job, Levels: to include optical (automatic and tilting), water level, Angular measuring instruments: optical and electronic theodolites, Principles of surveying and setting out, Linear measurement, Leveling:, Angular measurement, Distinction between open, link and closed traverse, Setting out, Cartographic detailing and setting out, Analysis of raw data and translation for cartographic detail, Electronic and laser instruments, Produce surveying solutions.

1A.104 Construction - I
Credit: 4
This subject provides the student with an introduction to the fundamental aspects of construction technology. This subject has been designed to enable students to develop the basic understanding for the construction techniques required at the preliminary stage of construction.
Contents: Site evaluation techniques, site investigation, introduction to various form of substructure (foundations) and superstructures for low rise and medium rise buildings.

1A.105 Technical Drawing - I
Credit: 4
This subject provides the student with an introduction to the skills and knowledge required to represent the thoughts of a designer in a specific understandable medium by using appropriate

drafting tools, techniques etc. for the industry. Basic approach of the subject is to understand two dimensional drawings and three dimensioning modeling using various techniques.
Contents: Drafting tools and techniques, drawing media, drawing techniques and process, understanding two dimensional forms and development of three dimensional modeling.

1A.106 Design Principles
Credit: 4
This subject forms the design base for the study programme. The subject has been devised to enable students to acquire knowledge and understanding of design considerations and the design process. It is intended that this subject will help students develop the ability to apply, analyse and evaluate design in terms of the production and cost implications for construction projects.
Contents: Planning, design and production phases, Materials selection, systems and equipment, and environmental impact, roles, responsibilities and obligations, How technology affects design.

1A.107 Typographic Ideas - I
Credit: 4
This subject extends students' understanding of typographic design by addressing the relationship between design, communication and meaning.
Contents: Typographic design, Ideas, Historical and contemporary examples, Relationships: design, communication and meaning, words, phrases, aphorisms, poems, signs, logotypes, Alteration of meaning: size, scale, contrast, relationship, Typographic practice and conventions, lateral thinking, brainstorming, random association, electronic manipulation of type forms. Statements of second law and concept of entropy, indicator diagram, mean effective pressure and air standard cycles, strain energy, stress-strain diagram, ductile and brittle material, elastic constants, impact loading, temperature stresses, shear stress, shear strain, casting, forging and welding.

1A.108 Cultural Interpretation
Credit: 4
In this subject students are encouraged to explore the idea that visual communication is often about reconciling personal aesthetic ambitions with commercial considerations.
Contents: Aesthetically driven visual communication, Aesthetics, Visual communication, Utilize and manipulate aesthetics, Interpretation and adaptation, Communication and manipulated message, Current visual culture, Methods of communication, Commercial visual communications, Current use of aesthetic manipulation

1A.109 Building Materials
Credit: 4
This subject gives details about various building materials required for construction.
Contents: Stone, Bricks, Clay Products and Refractories, Line, Cement, Mortars, Concretes, Timber Paints, varnishes, White wash, Distempers, Pig Iron, Cast Iron, Wrought Iron, Steel and its alloys non-Ferrous metals, Alloys of ferrous and non-ferrous metals, Glass, Plastics, Asphalt, Bitumen and Miscellaneous material, Rubber.

1A.110 Construction II
Credit: 4
This subject deals with basic superstructure focus such as doors, windows, staircase types, RCC framework. Students are provided with detail knowledge of timberwork in construction, industry.
Contents: Doors and windows (metal and wooden both), staircase (all types), timber staircase in details, form work for RCC construction.

1A.111 Climatology
Credit: 4
This subject investigates the potential benefits and threats to the environment posed by the construction of the built environment, explain the mechanisms involved in each and evaluates the constructional, technical and legislative processes and procedures used to eliminate or minimize their consequences.
Contents: Variety of ways in which the construction process impacts upon the environment, the global environmental issues of concern to the construction industry and the ways in which such issues are addressed, the local environmental issues of concern to the construction industry and the ways in which such issues are addressed, indoor environmental effects, environmental assessment systems.

1A.112 Design Procedures
Credit: 4
The subject encourages students to examine the essential procedures that underpin design. There is an opportunity to use these principles and procedures to create design solutions that meet the needs and requirements of owners, client's, occupiers and society in general.
Contents: The nature of design and its attendant methods, technologies, processes and procedures in terms of design practice, the roles and responsibilities of the design technologist in terms of design practice, roles and responsibilities of the design technologist during the contract phase of the construction process, roles and responsibilities of the design technologist during the project management phase of the construction process.

1A.113 Computer Applications I
Credit: 4
This subject develops the skills and knowledge of Information Technology that will enable the student to use popular word processing, spreadsheet and database software.
Contents: Standard information manipulation software, Application of standard software packages, Forming new files and folders/directories, Word processing applications, Spreadsheets, Database application.

1A.114 Technical Drawings II
Credit: 4
This subject concentrates in improving technical skills as well as presentation skills for the representations of drawings through measuring drawings presentation drawing, perspective views and rendering techniques.
Contents: Perspectives (one point, two point, interiors and exterior) measuring drawing, presentation drawings, and rendering techniques etc.

1A.115 Historical and Contextual Referencing II
Credit: 4
This subject provides the student with the knowledge, understanding and skills to define and research on historical context and related it to the present.
Contents: History of interior and furniture, key movement, styles, influences, sequence of key movements, artists, designers and crafts people. Research, comparisons, influences, techniques, processes and interpretation, methods of research, contemporary practice, comparative or critical analysis. This will include Georgian period, Colonial and Federal America, Jacobean, William and Mary, Queen Anne, Louis XIV, Louis XV, Louis XVI, Spanish, later 18th-early 19th century French-directoire and empire, early 19^{th} century- late 20^{th} century, Chinese and Japanese Interiors.

1A.116 Interior Design
Credit: 4
In this subject students will acquire the understanding needed to create and modify interior environments for specific purposes. They will develop spatial awareness and competence in working with 3-D formal elements.
Contents: Interior environments, Design processes, Research, Environmental, ethical and ecological considerations, Aesthetic and functional requirements, Analysis of brief, Create designs, Presentation, Technical processes, The designer's role as commercial practitioner, Legislation.

1A.117 Typographic Ideas II
Credit: 4
This subject is about developing skills in the use of type forms. These skills will be developed through a sound understanding of both traditional and current typographic practice, acquired through theoretical study and practical activity.
Contents: Body size, x-height, cap height, ascender, descender, stroke, serif, bowl, counter, fount or font, sans-serif, bracketed serif, hairline serif, slab serif, contrast, stress, weight, condensed, extended, italic, composition (metal, photo, digital), printing (litho, screen, letterpress), ancillary processes (vanishing, foilblocking), function, legibility, aesthetics, historical and contemporary influences.

1A.201 Theory of Structures I
Credit: 4
This subject deals about the mechanics, behavior of the building materials and their uses depending on their structural properties. This is highly rigorous mathematics and mechanics orientated subject which involves the structural designing of the structures. The structure are first analyzed for their behaviors under the sustained loads and they are designed using the different materials.
Content: Matrix Method of Structural Analysis, Flexibility Method, Stiffness Method, Analysis of three hinged arches, two hinged arches, suspension bridges, free vibration of single degree freedom systems, damping effects

1A.202 Computer Applications II
Credit: 4

This subject provides the student with an introduction to the use of appropriate computer software as an aid to design for the construction industry.
Contents: The knowledge and ability to save, retrieve and printout to scale a drawing file using industry standard CAD software, dimensioned ground floor and first floor plan of a building project, produce elevations, 3D-views and perspective views of a project.

1A.203 Construction - III
Credit: 4
This subject concentrates on the erection of complex multi-storey, structures and the use of modern system to create flexibility of internal space planning and design.
Contents: Structural steel construction, false ceilings, partition walls special types of doors and windows, glazing, lift and escalation.

1A.204 Estimation
Credit: 4
The subject has been designed to enable students to analyse and measure a range of components and elements found in buildings and structures.
Contents: Use of measurement during the design, construction and production phases of a project, taking of measurements and production of quantities, standard methods of measurement, Bill of Quantities: traditional, cut and shuffle and computer aided systems, Bill format: analyse different formats of bills of quantities, codes and other contract documentation.

11.205 Business Communication
Credit: 4
Corporate employers look for strong communication and presentation skills of candidates in their selection process. This unit is designed to develop the ability to communicate effectively in business. The text will consist of methods of communication, business letters and persuasive communication.
Content: Sources of information, Nature of Communication, Methods of Communication, Business Letters, Circulars and sales letters, Notices and advertisements, Reformulating and summarizing, Comprehension.

1A.206 Retail Design
Credit: 4
In this subject students will gain knowledge about exhibition and display. They will learn how to organize and manipulate spatial awareness. They will develop high-level competence in controlling the creative process from inception to design realization.
Contents: Visual, tactile and functional characteristics, Aesthetic characteristics, Functional characteristics, Creative potential, Structures, spatial awareness, materials and processes, Properties and characteristics, Construction finishing methods, Materials, Design development, Research, 2D and 3D ideas generation, Professional practice, Presentation, marketing and promotion.

1A.207 Management Principles
Credit: 4

This subject provides the student with an introduction to the principles and application of management as they relate to the technical and professional disciplines of Construction
Contents: The principles of management, the work of pioneers and founders of management, their evolution and application to modern day practice, Industry's markets and activities, the roles of the professions/disciplines in project teams and the management principles appropriate to organizations within the industry, application of management techniques to organization, work planning, co-ordination, control of resources, methods of procurement and contracting.

1A.208 Adaptive Reuse of Structures
Credit: 4
This subject enables students to develop their knowledge and understanding of building alteration and adaptation work.
Contents: Feasibility of modifying existing buildings for new situations and use, requirements of a 'design brief' and plan the modification of an existing building to conform to the design brief, drawings and specification for the modification of an existing building, alteration design and construction plan for the execution of the work.

1A.209 Construction - IV
Credit: 4
This subject is developed to understand the ways in which the useful life of a building can be extended by modern alteration and repair techniques. The importance of developing and acting sustainable construction techniques is emphasized and the processes and procedures involved in the safe demolition of buildings are explored.
Contents: Sustainable, construction, structural flooring, demolition process, building envelope

1A.210 Law and Contracts
Credit: 4
This subject intends to provide students with an introduction to the national legal system and the Law of Contract. It is also intended that students will develop knowledge and skill in those aspects of contractual administration relating to the common types of contract used in the industry for building.
Contents: Principles and procedures of law-construction process, Law relating to the construction process, Liabilities and responsibilities of parties, Contract is an enforceable agreement, Principles and procedures of law-organisation and practice of a company, Law relating to the organisation and practice of a company, Legal principles and requirements in India.

1A.211 Theory of Structures - II
Credit: 4
This subject deals about the mechanics, behavior of the building materials and their uses depending on their structural properties. This is highly rigorous mathematics and mechanics orientated subject which involves the structural designing of the structures. The structures are first analyzed for their behaviors under the sustained loads and they are designed using the different materials.

1A.212 Building Services I
Credit: 4

This subject provides the student with an understanding of the principal applications of building services to domestic, commercial and industrial buildings. It is intended that this should reinforce the need for co-ordination of the building services installations within the overall construction process.
Contents: Planning, design and installation of the plant and equipment used for space heating, ventilation and air-conditioning, systems used to distribute services to a variety of buildings and describe their characteristics, systems used to provide disposal systems for a variety of buildings and describe their characteristics, design and installation requirements for lifts and escalators in a range of buildings, integration, accommodation and access for maintenance of mechanical and electrical services into a variety of buildings.

1A.213 Computer Applications - III
Credit: 4
This is a subject in continuations of Computer Application-II. Here the students will learn to export a plastic models made in AutoCAD to 3D max software and render the models in this software to give a real life effect. Secondly apart from this they will be learning computer graphics(vector and raster)
Contents: Introduction to 3D max, Menu bar, Tab panels, Create and edit materials and material mapping. Giving light effects and placing cameras. Adding foliage and enhancing scenes, environments and back-grounds, high resolution renderings. Introduction to computer graphics vector graphics (Adobe Illustrator), raster graphics (Photoshop), Color modes, resolutions and print setup.

1A.214 Heath Safety and Welfare
Credit: 4
This subject covers the knowledge and skills needed to identify hazards in the workplace, assess the level of risk, make recommendations to control the risk and review the results. This must be considered along with relevant safety legislation.
Contents: Main health, safety and welfare legislation in the construction sector, main requirements of an effective health and safety policy along with the organisational arrangements necessary for its implementation, hazard and risk identification, risk assessment and formulate control measures to prevent ill health and injury.

1A.215 Exhibition Design
Credit: 4
This subject provides students to gain knowledge and understanding of communication through exhibition and display. They will develop the ability to organize and manipulate spatial awareness of exhibitions.

Contents: Research and record specific ideas and select materials appropriate to intended purpose and to understand the visual, tactile and functional characteristics. Develop an understanding of structures, spatial awareness, materials and processes.

1A.216 Furniture Design
Credit: 4

In this subject students will gain a knowledge and understanding of the visual and functional qualities of furniture and how it is designed. They will develop an understanding of a range of materials in construction and fabrication used in furniture design.
Contents: Visual, tactile and functional characteristics, Aesthetic characteristics, Creative potential, Functional characteristics, Structures, materials and making processes, Processes and methods:, Properties and characteristics, Response to briefs, Design development, Research: identification of information, selection, interpretation, historical, contemporary, cultural, market research, ergonomic, ethical and environmental issues, Professional practice.

1A.217 Photography, Media Techniques and Technology
Credit: 4
This subject enables learners to develop their specialist understanding of photography and to practice skills in using some of the media, materials, techniques, processes and technology associated with photography.
Contents: Photographic materials and processes, all media and materials have potential which can be explored and exploited. Learners may need to explore the traditional, digital and more unusual uses of photographic media and materials. Health and safety-it is important to eliminate risk to learners and others. Characteristics and properties of photographic materials, Evaluate.

1A.301 Construction V (Equipments and Methods)
Credit: 4
In this subject students will gain knowledge of various advanced equipments.
Factors including Technical specifications, Economic considerations, The Life cycle costing, Replacement costing, Future worth of Equipment, Analysis of production outputs and costs. Fundamentals of Constructions, Method of Construction (slip form construction etc), and equipments required for such type of constructions, choice and selection of the equipments for different types of constructions. Characteristics and performances of equipments like Earth moving, Erection, Material transport, Pile driving, Dewatering, Concrete construction and Tunneling.

1A.302 Building Services II
Credit: 4
This subject provides the student with an understanding of the principal applications of building services to domestic, commercial and industrial buildings. It is intended that this should reinforce the need for co-ordination of the building services installations within the overall construction process.
Contents: Planning, design and installation of the plant and equipment used for space heating, ventilation and air-conditioning, systems used to distribute services to a variety of buildings and describe their characteristics, systems used to provide disposal systems for a variety of buildings and describe their characteristics, design and installation requirements for lifts and escalators in a range of buildings, integration, accommodation and access for maintenance of mechanical and electrical services into a variety of buildings.

1A.303 Design and Function-Office Design
Credit: 4
This subject focuses on design and function 3D and spatial design of offices. This subject addresses technical issues encountered while designing most functional space-office
Contents: Functional features of 3D and spatial design of interior environment- offices, aesthetic significance of spatial environments, functional and aesthetic criteria to identify client or user values and practicalities to establish and apply objective criteria for assessing functional and visual effectiveness of the interior environment-offices working and presentation drawing, 3D views, 3D model of the proposed design solution of the design project-an office.

1A.304 Website Design
Credit: 4
This subject aims to provide learners with the basic skills required for website design. It promotes a sound understanding of basic coding practices and styles and explores the elements required for good website design.
Contents: Web browser, functions and features such as network preferences, protocols, general preferences, editor preferences, Design issues, design elements such as layout, fonts, colours, readability, navigation, HCI, usability and target audience, Web pages, editing source, viewing source code, modifying code eg colours, styles and text, writing HTML code, Advanced web technologies.

1A.305 Design Technology
Credit: 4
This subject deals with the properties of the materials and concrete. The designing of the concrete mix used for various design purposes. The tests to be employed for the concrete on the site, The types of concrete, their respective uses. The test to be followed for the determination of strength of concrete, behavior of concrete, selection of different types of concrete.

1A.306 Recent Advances and Construction Practice
Credit: 4
This gives an overview of latest technological advances in the area of construction.
Contents: Light Weight Materials, properties (physical and chemical) Foams and hollow blocks concrete, Introduction to high strength concrete, Types of high strength concrete, their classifications, Factors affecting strength of concrete, Admixtures, Polymers in Civil Engineering Polymers, fibers and composites, Fibre reinforced plastic in sandwich panels, modeling. Architectural use and aesthetics of composites. Adhesives and sealants.

1A.307 System Design and Value Engineering
Credit:4
Analysis of the project, Its objectivity and direction, Appraisal of the projects using techniques. System Design approach to the buildings, Objectives and constraints to the building projects. The problem solving approach by group discussion, brain storming etc. Introduction to value engineering, Function analysis. Job plan, Value savings during construction, Value management Case studies in Value engineering.

1A.445 Project I

Credit:4

1A.446 Project II
Credit:4